(Translation)

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[NAME OF DOCUMENT] SPECIFICATION
[TITLE OF THE INVENTION] SCHEDULE STORING AND DISPLAYING DEVICE
[SCOPE OF CLAIMS FOR PATENT]

[Claim 1] A schedule storing and displaying device including a storage part for storing schedule data, and a display part for displaying the schedule data stored in the storage part; the schedule storing and displaying device comprising:

calendar display means for displaying a calendar on the display part;

position specifying means for specifying a position on the calendar display;

reading means for reading schedule data corresponding to an arbitrary period position specified by the position specifying means from the storage part; and

display control means for displaying the schedule data read by the reading means on the display part.

[DETAILED DESCRIPTION OF THE INVENTION]

[Technical Field of the Invention]

The present invention relates to a schedule storing and displaying device for storing schedule data and displaying the same on a display part as necessary.

[Prior Art]

Conventionally, a schedule storing and displaying device for storing schedule data in response to key input and displaying the same on a display part as necessary is known. In this type of the schedule storing and displaying device, keys such as alphabets, numbers, kana, and the like are arranged in a keyboard, so that the schedule data can be stored in correspondence to a certain date by operating such keys.

However, in such schedule storing and displaying device, all the schedule data to be stored are stored

and displayed in correspondence to dates, and the schedule data cannot be stored and displayed in other period units such as weekly or by days of the week.

[Problems to be Solved by the Invention]

In view of the situation described above, it is an object of the present invention to provide a schedule storing and displaying device for storing and displaying schedule data corresponding to an arbitrary period.

[Means for Solving the Problems]

The present invention enables reading of the corresponding schedule data by setting the schedule data of a plurality of types of period units such as daily, weekly, day of the week, and monthly, and specifying a position on a calendar display with position specifying means such as a tablet input part.

[Embodiments of the Invention]

A device that is also used as a small electronic calculator will now be described as one embodiment of the present invention with reference to the drawings.

Fig. 1 shows an outer appearance of a datebook body case 11. The datebook body case 11 is usually carried around in a folded state, where a display part 13 having a tablet input part 12 integrally formed at an upper part and a first key group 14a are arranged on the left side of the inner surface, and second to fourth key groups 14b to 14d are arranged on the right side in an open state shown in the figure. The first to the fourth key groups 14a to 14d configure a key input part 14. The first key group 14a includes keys for performing mode specification, registration, and computation, and is specifically configured by a "TEL" key 15 for specifying a telephone number mode, a "MEMO" key 16 for specifying a memo mode, a "SCHE" key 17 for specifying a schedule mode, a "CALE" key 18 for specifying a calendar mode, a "SEC" key 19 for specifying a secret mode, a registration key 20, a computation key 21, and the like. The second key group 14b includes keys for performing control when inputting/outputting data, and is specifically configured by an "I/O" key 22 for setting an input/output state in each mode, a cursor key 23 for

moving a cursor displayed on the display part 13 in the up and down direction and the left and right direction, a scroll key 24 for selecting the displayed data, a write/erase key 25 for specifying write/erase in tablet input, a "heavy/thin" key 26 for specifying the line thickness in table input, a date key 27 for specifying the date in the schedule mode, a time key 28 for specifying the time at the relevant point, and the like. The third key group 14c is an alphabet key, and the fourth key group 14d is a kana key.

As shown in the figure, when displaying a calendar for January, 1986 on the display part 13, a table for seven days of the week is displayed, and letters "1986-1" indicating the year and the month is displayed therebelow. Furthermore, marks "■ (schedule set week)", "+(schedule non-set week)", "+", "+", "+" indicating the first week to the fifth week are displayed at the relevant part at the left end of each week. Regarding the date set with schedule, a mark is displayed at the right top corner as in day "27". This mark indicates that the schedule is set in the morning.

A configuration of an electronic circuit in the datebook body case 11 will now be described using Fig. 2.

In the figure, a key operation signal generated from the operation of the key input part 14 is transmitted to a CPU 31. The CPU 31 performs a control operation of other circuits to performing write/read of various data with respect to a data memory part 32 for storing schedule data and a register part 33. In addition, the CPU 31 transmits a control signal to a tablet control part 34 and transmits display data and schedule data to a display creating part 35. The register part 33 stores and holds various data when controlling write/read of the schedule data, and internally includes a display year and month register 33a, a search week register 33b, a search date register 33c, a search day of the week register 33d, and a search month register 33e. The display creating part 35 creates calendar, schedule data, and the like to be displayed on the display part 13 with the data from the

CPU 31 with a predefined format, and transmits the result to a display buffer 36. The display part 13 is display driven according to the data held in the display buffer 36. The display part 13 is configured by a dot matrix of 64×96 dots by a liquid crystal display element, for example, and can display 128 letters (16 letters × 8 rows) of 8×6 dot letters.

On the other hand, the tablet input part 12 integrally arranged on the display part 13 is configured by two transparent electrode plates made of transparent members arranged by way of a spacer, and is applied with a control voltage from the tablet control part 34 operating according to the control signal of the CPU 31, where if a specific position of the tablet input part 12 is pushed, the X coordinate data and the Y coordinate data of the pushed position are respectively transmitted to an A/D converting part 37 as a voltage signal of an analog value. The A/D converting part 37 converts the input voltage signal to a digital value as coordinate data of X coordinate and Y coordinate, and sends the result to the CPU 31.

The format of the schedule data created by the display creating part 35 will now be described using Fig. 3. The display creating part 35 creates data for calendar display according to the data transmitted from the CPU 31, and also selects one of the four formats, that is, a weekly schedule, a daily schedule, a day of the week schedule, and a monthly schedule in schedule data display, and creates display data for the display thereof.

Fig. 3(A) shows a format of a weekly schedule. Of the area for 16 letters × 8 rows, the two letters at the left end of the first row to the seventh row are the area for each date "D1" to "D7" of one week, and the next 2 letters × 7 rows on the right is a range data area for a symbol indicating the range. The area further on the right or the area for 12 letters × 7 rows becomes the schedule data area indicating the schedule for one week. An area of "year", "month", and "week" indicating which week of the month are arranged in order at the bottom

row.

Fig. 3(B) shows a format of a daily schedule. The first row has an area of "year", "month", "date", and "day of the week" in order, and the second to the eighth rows are all schedule data area indicating the schedule for the relevant day.

Fig. 3(C) shows a format for a day of the week schedule. The two letters at the left end of the first row to the sixth row are an area for the day of the week and each date "D1" to "D5", and an area on the right side thereof of 14 letters × 7 rows are the schedule data area indicating the schedule for the relevant day of the week. An area of "year" and "month" is provided at the bottom row.

Fig. 3(D) shows a format of a monthly schedule. The first row has an area of "year" and "month", and the second to the eighth rows are all schedule data area indicating the schedule for the relevant month.

The operation of the embodiment will be described below.

For example, the operation of once storing each weekly, daily, day of the week, and monthly schedule data for "January 1986", reading out the data, and displaying the same will be described.

First, after key operating "1986", "date", "1", "date" with the registration key 20 and the date key 27 to perform calendar display of "January 1986", the "CALE" key 18 is operated, so that the CPU 31 inputs and sets the display year/month data "January 1986" in the display year/month register 33a of the register part 33 according to the key operation signals. The CPU 31 sends the data of the display year/month register 33a to the display creating part 35, and creates display data for calendar display. The display data created by a display creating part 35 is sent to a display buffer 36, and as shown in Figure 4(2), a calendar display is performed in accordance with the display data.

When it is in such state where a calendar display is performed, and for example, the position of the mark "■" indicating the first week of this month is pressed

by a tablet input part 12, the voltage signal of the analog value according to this pressed position is sent from the tablet input part 12 to an A/D converting part 37 as coordinate data of X-coordinate and Y-coordinate. The A/D converting part 37 converts this voltage signal to a digital value to be outputted to CPU 31. The CPU 31 executes the process shown in Figure 5 for the tablet input which was sent via the A/D converting part 37.

In the same figure, firstly, as shown in Step S01, it is determined by the display part whether or not the calendar is being displayed. Herein, if the determined result is NO, a process different from the present operation (for example, input of image data) is performed, but here, since the determined result is YES, the process proceeds to Step S02. In Step S02, the pressed coordinate position is determined from the voltage signal of the digital value from the A/D converting part 37. Then, based on this determined result, the type and items of the schedule to be displayed are determined in the following Step S03. Namely, the type and items of the schedule are determined by the pressed position in the calendar display. In the following Step S04, if the type of schedule to be displayed is determined to be a weekly schedule, the process proceeds to Step S05. In Step S05, the item determined by the pressed position (that is, in this case, the data "1st" indicating the "first" week) is inputted and set to a search week register 33b of the register part 33, and the schedule data corresponding to this data "1st" is searched by the data memory part 32. In this case, each date data "29" to "4" of the first week is read as the week display data, and "winter break" is read as the range data "←-----→" and the schedule data, respectively, by searching from the data memory part 32. Then, in the following Step S06, when these read data is outputted to the display creating part 35 along with the data "1st" retained in the search week register 33b and the display year/month data "January 1986" retained in the display year/month register 33a, the display creating part 35 creates the display data according to the format shown in the

aforementioned Figure 3(A), and is written in the display buffer 36. As a result, in the following Step S07, according to the display data written in the display buffer 36, the weekly schedule is displayed as shown in Figure 4(3).

In order to write the weekly schedule, the "I/O" key 22 is operated to the data input mode in the state of Fig. 4(3). The kana key 14d etc. is operated to input the schedule, and finally, the "SCHE" key 17 is operated. The display data displayed on the display part 13 is then stored in the data memory part 32 as the weekly schedule.

Moreover, in the state of the aforementioned Figure 4(2), when the position of the date "27" is pressed by the tablet input part 12, the voltage signal of the analog value according to this pressed position is sent from the tablet input part 12 to an A/D converting part 37, the voltage signal is converted to a digital value to be outputted to CPU 31. The CPU 31 executes the process shown in Figure 5 for this tablet input.

In the same figure, in Step S02 via Step S01, the coordinate position is determined, and based on this determined result, the type and items of the schedule to be displayed are determined in the following Step S03. In the following Step S04, if the type of schedule to be displayed is determined to be a daily schedule, the process proceeds to Step S08. In Step S08, along with inputting and setting the value "27" which is the date data determined by the pressed position to a search date register 33c of the register part 33, and inputting and setting the corresponding day data "MO" to the search day register 33d, the schedule data corresponding to the value "27" is searched by the data memory part 32. In this case, as the corresponding date schedule data, "Ohshima-san birthday" is read by the search from the data memory part 32. Then, in the following Step S09, when these read data is outputted to the display creating part 35 along with the display year/month data "January 1986" retained in the display year/month register 33a, data "27" retained in the search date register 33c, and data "MO" retained in the search day register 33d, the

display creating part 35 creates the display data according to the format shown in the aforementioned Figure 3(B), and is written in the display buffer 36. As a result, in the following Step S07, according to the display data written in the display buffer 36, the day schedule is displayed as shown in Figure 4(4).

In order to write the daily schedule, the "I/O" key 22 is operated to the data input mode in the state of Fig. 4(4). Similar to the input of the weekly schedule, the schedule is inputted, and the "SCHE" key 17 is operated to store the display data in the data memory part 32 as the daily schedule.

When the position of the letters "WE" indicating Wednesday is pushed by the tablet input part 12 in the state of Fig. 4(2), the voltage signal of analog value corresponding to the pushed position is transmitted from the tablet input part 12 to the A/D converting part 37, converted to a digital value, and output to the CPU 31. The CPU 31 executes the process shown in Fig. 5 on the tablet input.

In the figure, the coordinate position is determined in step S02 through step S01, and the type and item (what day of the week) of the schedule to be displayed are determined in step S03 based on the determined result. When determined that the type of the schedule to be displayed is the day of the week schedule in the following step S04, the process proceeds to step S10. In step S10, the data "WE", which indicates Wednesday and is determined from the pushed position, is inputted and set in the search day of the week register 33d of the register part 33, and the schedule data corresponding to the data "WE" is searched from the data memory part 32. In this case, the date data "1", "8", "15", "22", "29" of each Wednesday are read as day of the week display data and "Yoikono television", "special program", "fifth chapter", "sixth chapter", "seventh chapter", and "eighth chapter" are respectively read as the corresponding schedule data from the data memory part 32 by search. In step S11, when the read data is output to the display creating part 35 with the display

year/month data "January 1986" held in the display year/month register 33a, and the data "WE" held in the search day of the week register 33d, the display creating part 35 creates display data according to the format shown in Fig. 3(C), and writes the result in the display buffer 36. As a result, the day of the week schedule as shown in Fig. 4(5) is displayed according to the display data written in the display buffer 36 in the following step S07.

In order to write the day of the week schedule, the "I/O" key 22 is operated to the data input mode in the state of Fig. 4(5). The schedule is inputted with respect to each of the same day of the week, and the "SCHE" key 17 is operated to store the day of the week schedule in the data memory part 32.

When the position of date "[1986-1]" is pushed by the tablet input part 12 in the state of Fig. 4(2), the voltage signal of analog value corresponding to the pushed position is transmitted from the tablet input part 12 to the A/D converting part 37, converted to a digital value, and output to the CPU 31. The CPU 31 executes the process shown in Fig. 5 on the tablet input.

In the figure, the coordinate position is determined in step S02 through step S01, and the type and item (what month) of the schedule to be displayed are determined in step S03 based on the determined result. When determined that the type of the schedule to be displayed is the monthly schedule in the following step S04, the process proceeds to step S12. In step S12, the data "[1986-1]", which is the data of the month and is determined from the pushed position, is inputted and set in the search month register 33e of the register part 33, and the schedule data corresponding to the data "[1986-1]" is searched from the data memory part 32. In this case, "Perry Rhodan" "read through ch.61-81" are read from the data memory part 32 as the schedule data of the corresponding month by search. In the next step S13, when the read data is output to the display creating part 35 with the data "[1986-1]" of the search month register 33e, the display creating part 35 creates

display data according to the format shown in Fig. 3(D), and writes the result in the display buffer 36. As a result, the monthly schedule as shown in Fig. 4(6) is displayed according to the display data written in the display buffer 36 in the following step S07. The write of the monthly schedule is similar to the daily schedule described above.

Moreover, although in the aforementioned example, a tablet input part 12 is positioned on the display part 13 and the position in the calendar display is designated by pressing, the cursor can be displayed on the display part 13 to designate the position by this cursor.

The input of the schedule data may not be carried out by specifying a position on the calendar display, and the year/month/date data or the day of the week data may also be key input and the schedule data may be input thereafter.

[Effect of the Invention]

According to the present invention described in detail above, a schedule storing and displaying device capable of storing and displaying the schedule data corresponding to an arbitrary period by setting the schedule data of a plurality of types of period units such as daily, weekly, day of the week, and monthly, and specifying a position on the calendar display by position specifying means such as tablet input part to read out the corresponding schedule data is provided.

[Brief Description of Drawings]

The figures illustrate one embodiment of the present invention in which

Fig. 1 is a view showing an outer appearance configuration;

Fig. 2 is a block diagram showing a configuration of an electronic circuit;

Fig. 3 is a view showing a display format in displaying each type of schedule and schedule data;

Fig. 4 is a view showing a key operation and a calendar display state corresponding thereto, and each schedule display state with respect to a tablet input in the calendar display state; and

Fig. 5 is a flowchart showing the display processing content with respect to the tablet input.

[Description of the Reference Numerals]

11 Datebook body case
12 Tablet input part
13 Display part
14 Key input part
14a First key group
14b Second key group
14c Third key group (alphabet key)
14d Fourth key group (kana key)
15 "TEL" key
16 "MEMO" key
17 "SCHE" key
18 "CALE" key
19 "SEC" key
20 Registration key
21 Computation key
22 "I/O" key
23 Cursor key
24 Scroll key
25 Write/Erase key
26 "Heavy/Thin" key
27 Date key
28 Time key
31 CPU
32 Data memory part
33 Register part
33a Display year/month register
33b Search week register
33c Search date register
33d Search day of the week register
33e Search month register
34 Tablet control part
35 Display creating part
36 Display buffer
37 A/D converting part

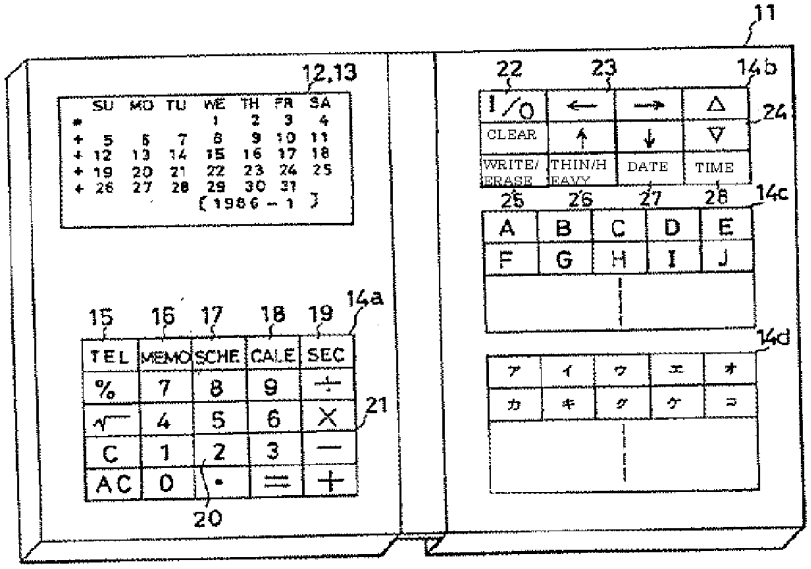
11
12,13
SU MO TU WE TH FR SA
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31
1986 - 1
22
23
14b
I/O
CLEAR
WRITE/ ERASE
THIN/H EAVY
DATE
TIME
24
25 26 27 28
14c
A B C D E
F G H I J
14d
ア イ ウ エ オ
カ キ ク ケ コ
15 16 17 18 19
14a
TEL MEMO SCHE CALE SEC
% 7 8 9 ÷
√ 4 5 6 ×
C 1 2 3 −
AC 0 • = +
21
20

Fig.1

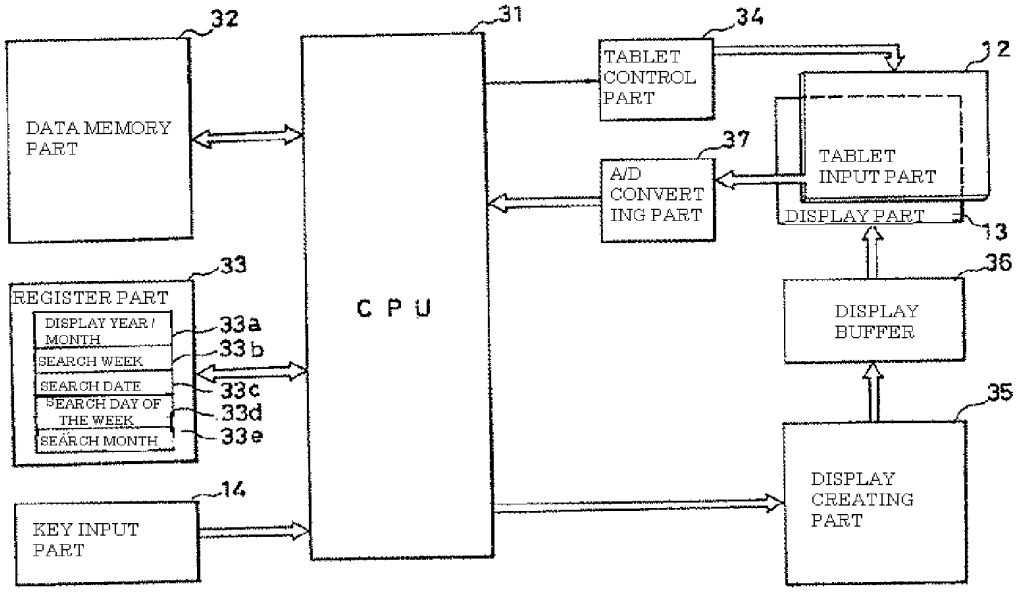
32
DATA MEMORY PART
31
C P U
34
TABLET CONTROL PART
12
TABLET INPUT PART
DISPLAY PART
13
37
A/D CONVERT ING PART
33
REGISTER PART
DISPLAY YEAR / MONTH
SEARCH WEEK
SEARCH DATE
SEARCH DAY OF THE WEEK
SEARCH MONTH
33a
33b
33c
33d
33e
14
KEY INPUT PART
36
DISPLAY BUFFER
35
DISPLAY CREATING PART

Fig.2

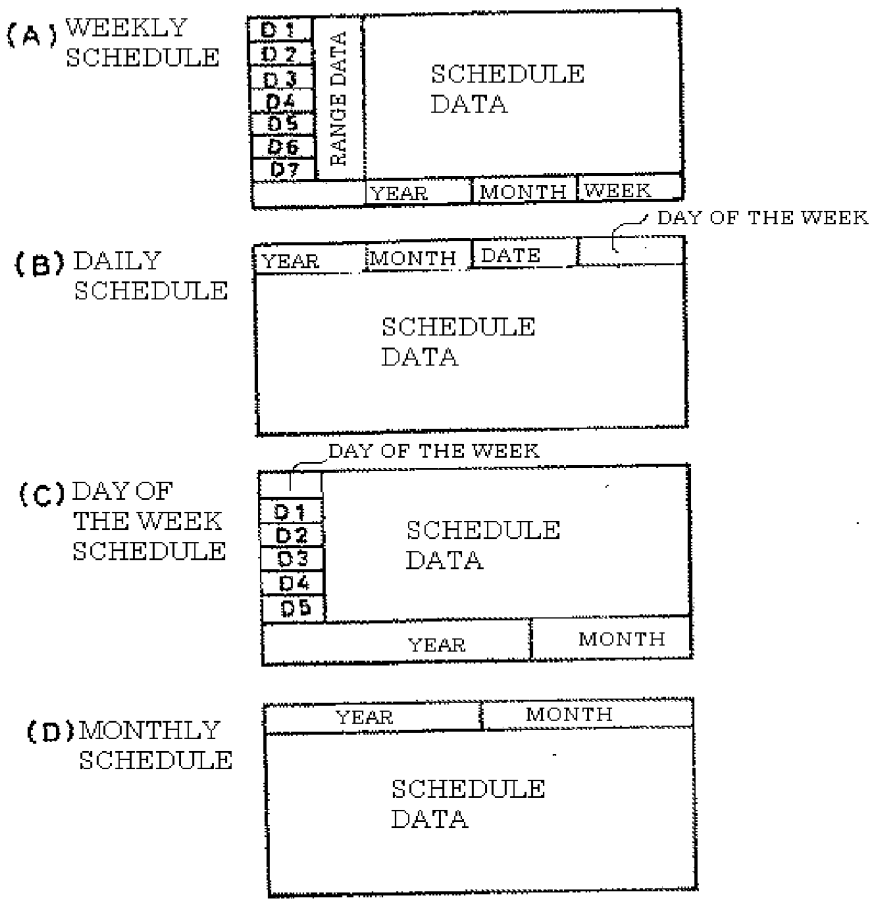
(A) WEEKLY SCHEDULE
D1
D2
D3
D4
D5
D6
D7
RANGE DATA
SCHEDULE DATA
YEAR
MONTH
WEEK
DAY OF THE WEEK
(B) DAILY SCHEDULE
YEAR
MONTH
DATE
SCHEDULE DATA
DAY OF THE WEEK
(C) DAY OF THE WEEK SCHEDULE
D1
D2
D3
D4
D5
SCHEDULE DATA
YEAR
MONTH
(D) MONTHLY SCHEDULE
YEAR
MONTH
SCHEDULE DATA

Fig.3

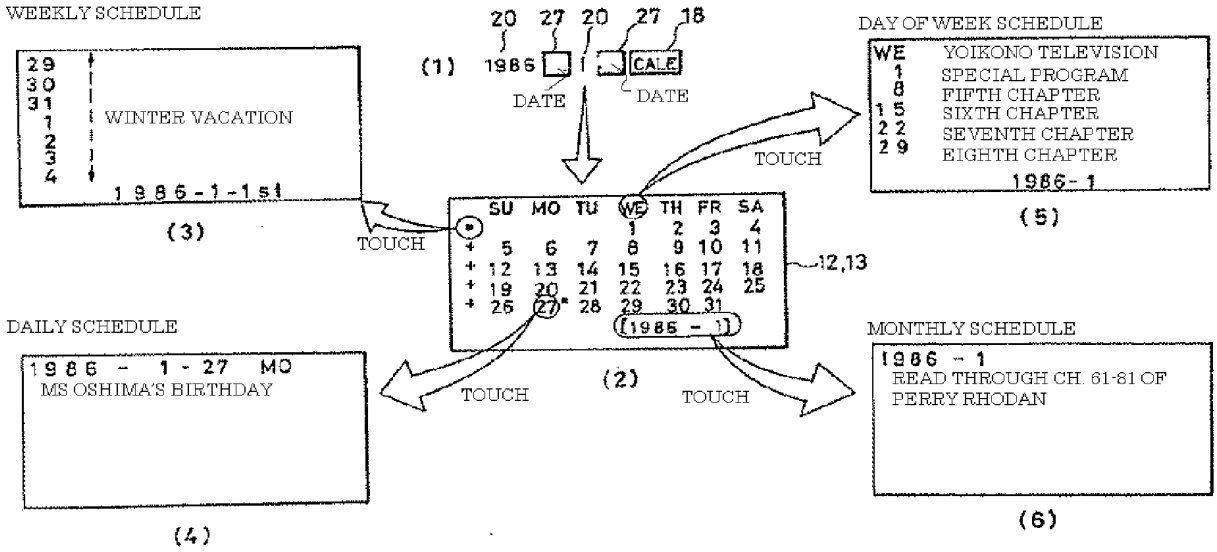
WEEKLY SCHEDULE
29
30
31
1
2
3
4
WINTER VACATION
1986-1-1st
(3)
20 27 20 27 18
(1) 1986
DATE
DATE
CALE
TOUCH
TOUCH
SU MO TU WE TH FR SA
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31
1986 - 1
12,13
(2)
DAY OF WEEK SCHEDULE
WE YOIKONO TELEVISION
1 SPECIAL PROGRAM
8 FIFTH CHAPTER
15 SIXTH CHAPTER
22 SEVENTH CHAPTER
29 EIGHTH CHAPTER
1986-1
(5)
DAILY SCHEDULE
1986 - 1 - 27 MO
MS OSHIMA'S BIRTHDAY
(4)
TOUCH
TOUCH
MONTHLY SCHEDULE
1986 - 1
READ THROUGH CH. 61-81 OF
PERRY RHODAN
(6)

Fig.4

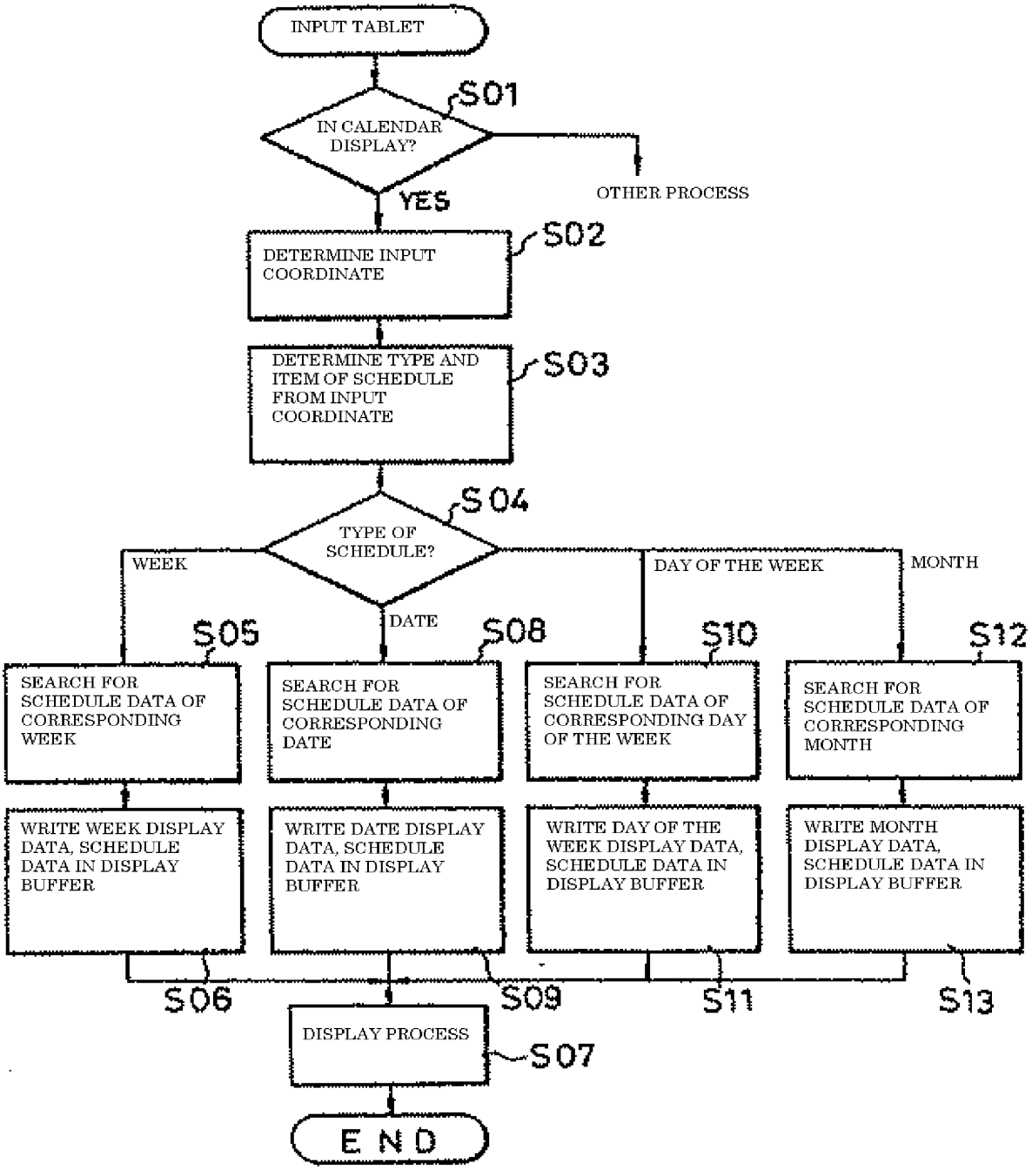
INPUT TABLET
S01
IN CALENDAR DISPLAY?
YES
OTHER PROCESS
S02
DETERMINE INPUT COORDINATE
S03
DETERMINE TYPE AND ITEM OF SCHEDULE FROM INPUT COORDINATE
S04
TYPE OF SCHEDULE?
WEEK
DATE
DAY OF THE WEEK
MONTH
S05
SEARCH FOR SCHEDULE DATA OF CORRESPONDING WEEK
S08
SEARCH FOR SCHEDULE DATA OF CORRESPONDING DATE
S10
SEARCH FOR SCHEDULE DATA OF CORRESPONDING DAY OF THE WEEK
S12
SEARCH FOR SCHEDULE DATA OF CORRESPONDING MONTH
WRITE WEEK DISPLAY DATA, SCHEDULE DATA IN DISPLAY BUFFER
WRITE DATE DISPLAY DATA, SCHEDULE DATA IN DISPLAY BUFFER
WRITE DAY OF THE WEEK DISPLAY DATA, SCHEDULE DATA IN DISPLAY BUFFER
WRITE MONTH DISPLAY DATA, SCHEDULE DATA IN DISPLAY BUFFER
S06
S09
S11
S13
DISPLAY PROCESS
S07
END

Fig.5